

REAR PROJECTION

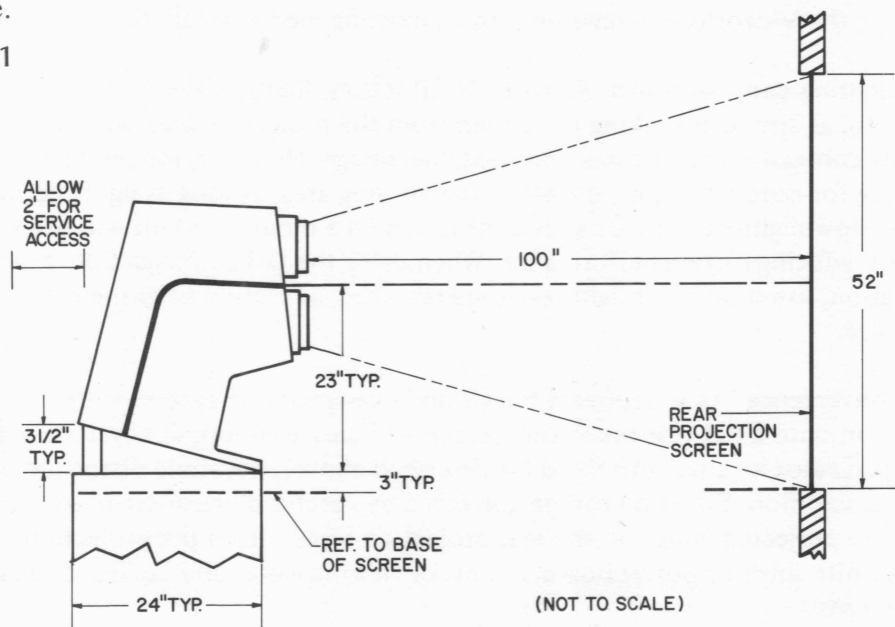
The RPK-1 Rear Projection Conversion Kit permits the VideoBeam® 1000A projector to be used with conventional rear projection screens, with only minimal modifications to the projector. The kit consists of three snap-in yoke connectors for electronic reversal of the picture scan, and a modified bow generator board for picture geometry changes. Suggested retail price of the kit is \$150, plus dealer installation, which should take approximately one hour. (Since the kit is not designed to correct for optical field curvature, its use for extremely high resolution displays such as computer alpha-numerics, is not recommended.) The kit may be ordered from the Video Sales Department.

Image sizes. Image sizes should be determined by audience size. A good rule of thumb is that viewers should sit no closer than two times the screen width and no further than eight to twelve times the screen width. The standard Model 1000A produces an image approximately 52" x 70" (with a throw distance of 100"). Optionally, the D-120 Image Conversion Kit may be used to provide a 6' x 8' image (throw distance of 139"). As the Model 1000A is a fixed focus projector, these dimensions are not variable. Exact dimensions should be determined at the time of installation, and the edges of the screen masked from the projector side to obtain a square picture edge.

Screen. For the highest quality image, a glass or rigid plastic rear projection screen (such as 3M "Lenscreen") should be used. While flexible vinyl screens may be used for a temporary display, rigid acrylic or glass provides better optical performance and should be used for a permanent installation. The advantages of rigid screens over flexible screens include higher optical clarity, better resolution, and greater durability. A moderately low gain (i.e., 1.8-2.5) material such as Lenscreen LS60/180 should be used to minimize hot spotting and provide a comfortable viewing angle ($\pm 45^\circ$). While high-gain specialty rear projection materials are available, they are not recommended for video projection because of noticeable hot spotting and color shifts. Existing rear projection screens generally will be suitable for video projection. The screen should be located high enough so every seat has a clear view, and mounted with the dull side toward the audience. "Lenscreen" Type LS60/180 is manufactured by 3M Company, Visual Products Division, 3M Center, St. Paul, MN 55101 (612/736-0524). Other materials with similar characteristics may be used, with either a glass or acrylic surface.

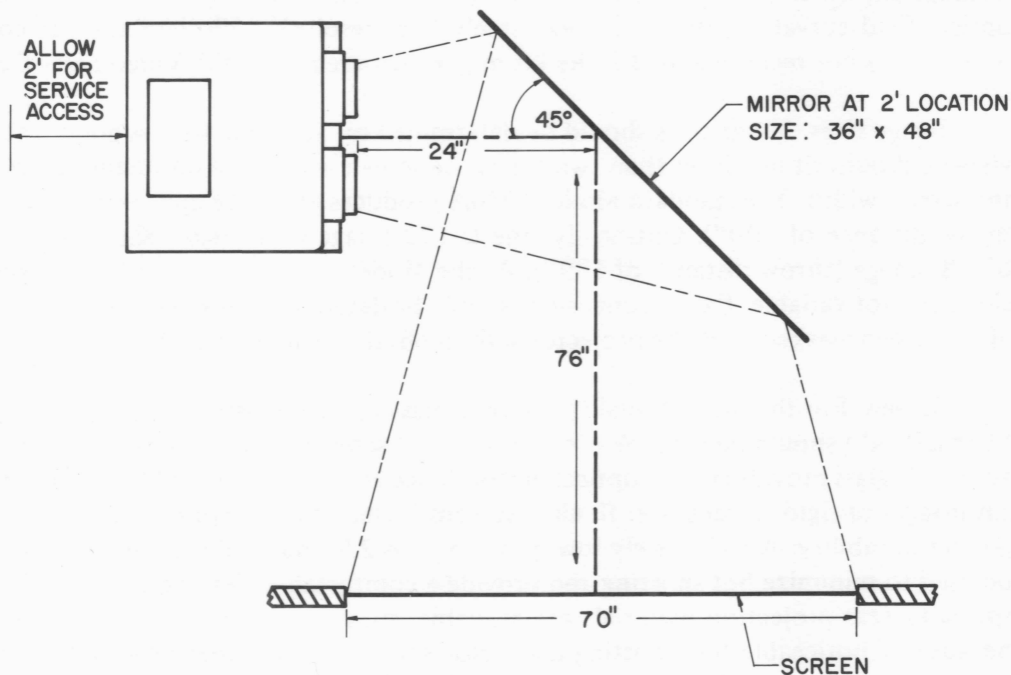
Projector. (It is recommended that the 1000A Remote Control Projector be used, so that picture and tuning controls may be adjusted from the viewing area.) For maximum sharpness and light distribution toward the viewing area, the projector should be raised to the centerline of the screen and tipped forward so that the light path is roughly perpendicular to the screen surface (see Figure 1). Projection distances remain the same as for front projection, and must be adhered to for optimum performance.

Figure 1



An alternate method for reversing the image is by using a high quality Mylar front-surfaced mirror (see Figure 2), such as the "Mirrorlite" glassless panel, or a rigid glass mirror. Common back-surfaced mirrors should not be used as they will cause a ghost image. While the mirrors are expensive, they do allow significant space savings, in some cases, as they "fold" the light path from the projector.

Figure 2



(NOT TO SCALE)

Alignment of the projector, mirror and screen is critical and should be worked out carefully in advance. A simple method of determining mirror size and location is to draw to scale a top view of the light path from the projector to the screen. By folding the drawing, it is easy to determine the larger dimension of the mirror and the angle and location of the mirror. This method will provide an easy approximation of the sizes and distances necessary.

The mirror may also be used for other types of projectors, for additional space savings and ease of fitting the VideoBeam television into an existing media installation.

Lighting considerations. As with all RP setups, lights in the projection room must be kept at a minimum, as any light striking the screen from the projection area will wash out the picture, resulting in a low-contrast, in most cases unacceptable, image. However, moderate ambient light, more than adequate for note-taking, is possible in the viewing area, as long as lights do not shine directly on the screen. Downlighting with incandescent lamps on a dimmer circuit will offer the greatest flexibility without reducing picture performance. When using the D-120 Image Conversion Kit in a rear projection installation, lower ambient light levels are required, as picture brightness is reduced with the larger image size.

Convergence. As VideoBeam television is designed as a system with a curved projection screen, projection onto a flat rear-projection screen will create abnormal keystone and pincushion distortions. If the projector is raised and tilted (as described above), keystone distortion will be minimized; most of the pincushion distortion can be corrected by careful pincushion adjustments. Since it is difficult to see the projected image on the rear projection screen from the projection room, covering the screen with a white sheet or poster board will make viewing easier and facilitate the dynamic convergence adjustments.

Electrical modifications. The modifications to the projector are limited to horizontal scan reversal and related dynamic convergence changes. With the RPK-1 Kit, these are accomplished by installing the red, blue, and green yoke connector adapters between the corresponding red, blue, and green yoke plugs and yoke control bracket, and replacing the "bow" generator board with the "wob" generator board supplied.

No electrical modifications are necessary if a mirror is used for scan reversal.

REAR PROJECTION INSTALLATION SPECIFICATIONS

	<u>Model 1000A Projector</u>	<u>Model 1000A Projector With D-120 Conversion Kit</u>
Image Size	52" x 70" (7' diagonal)	72" x 96" (10' diagonal)
Projection Distance ¹ (on axis)	100" ±1"	139" ±1"*
Peak Highlight Brightness ²	8 fL	4 fL
Horizontal and Vertical Viewing Angles ²	±45°	±45°

*D-120 Conversion lenses may vary from the mean by ±3"

¹Projection distance may be shortened with the use of mirrors (see text)

²When using screen material with gain = 1.8, such as Lenscreen Type LS60/180, manufactured by 3M Company.

VIDEOBEAM® PROJECTION TELEVISION RPK-1 REAR PROJECTION KIT

Installation Instructions

Contents of the Kit:

- 1 Modified bow generator board
- 3 Yoke connector adapters (see note below)

Installation

Be sure the set is off, and do not let hardware fall into the set.

- 1. Remove the trim panel surrounding the tubes.
- 2. Remove the cabinet's top half.
- 3. Remove the bow generator board and replace with the supplied modified bow generator board.
- 4. Disconnect the yoke connectors one at a time from the yoke connector bracket and insert the appropriate yoke connector adapter in line.
Note: Yoke connector adapters are not identical. Adapters for each yoke may be identified by either a color-coded dot at one end of the connector or by the color striping on the pair of yellow wires in the adapter.
- 5. Perform a complete dynamic convergence as outlined in Chapter 7.

Using the D-120 Kit with Rear Projection

The D-120 image conversion kit may be used in conjunction with the rear projection kit. Set-up procedures remain the same, except that the projector-to-screen distance should be established as described in the D-120 instruction sheet.